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Selecting and Fattening 4-H Beef Calves

By
E. F. RINEHART

COOPERATIVE EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS OF THE STATE OF IDAHO UNIVERSITY OF IDAHO EXTENSION DIVISION AND U. S. DEPARTMENT OF AGRICULTURE COOPERATING

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Introduction

Beef Cattle Club Rules

1. Any boy or girl in the state, who is 10 to 21 years of age, inclusive, on July 15th of the year in which the work is done, and who will agree to abide by the rules of the club, is eligible to membership in the 4-H club.
2. Enrollment should be made on the standard enrollment blank and sent to the County Extension Agent.
3. Each beef calf club member will be expected to feed out one or more steers or heifers either for market or for a show.
4. The cattle are to be fed and cared for by the club member.
5. Weights must be secured and reported at the beginning and close of the contest. Estimates of weights, secured by measurement, should be taken and recorded each month.
6. Accurate records of the cost and amount of feed must be kept in the record book supplied by and submitted to the County Extension Agent at the close of the contest.

Beef Club Projects

Division I. One or more fat steers or heifers for market.

Division II. One or more heifer calves for breeding purposes.

Division III. Yearling heifer, continuation of Division II, using the same animal. (A superior animal of same age may be substituted.)

Division IV. Beef cow, continuation of Division III using same animal. (A superior animal of same age may be substituted.) In this division, club members should strive to increase the size of their herd in an effort to develop a beef herd.

Exhibits

Division I. One fat steer or heifer (beef breed).

Division II. One beef heifer calf.

Division III. One beef yearling heifer calf.

Division IV. One beef cow.

Basis of Awards

Individuality of animal	50
Fitting and showmanship	25
Completeness and accuracy of record book	25
Possible score	100

This bulletin gives instructions on only Division I.

The Plan and Goal of 4-H Club Work

Beef cattle club work is organized in order that farm boys and girls may have experience in the selection, management, growing, and fattening of cattle for market. When the club cattle are taken into the show ring, it is in order that they may be properly rated and classified according to market types and grades.

Many good calves are fitted and shown each year. All cannot win. Club work is conducted to teach farm boys and girls the selection and finishing of good market animals. Members should not enroll for the sole purpose of producing a grand champion. Requests for the assistance in the selection of calves that will be grand champions wherever shown are received every year. If the objective is lost from sight, disappointment may be the result.

CHAPTER 1

Organization, Meetings, Records

Organization and Meetings

Regular meetings are of much benefit in successful club work. Each club should meet regularly. At the first meeting officers should be elected. These usually consist of a president, vice president, secretary, treasurer, and news reporter.

A regular order of business should be followed at each meeting The president should call the meeting to order and the secretary call the roll. The following order of business is suggested:

1. Meeting called to order.
2. Roll call and progress report by members.
3. Reading minutes of previous meeting.
4. Reports of committees.
5. Unfinished business.
6. New business.
7. Program.
8. Adjournment.

The program should consist of subject matter and demonstration work by members. Suggestions for form of meetings that are instructive follow:

1. The making of rope halters.
2. A discussion of the types and breeds and of the market grades of beef cattle. Different members can be assigned

to discuss different phases. Some material is presented in this bulletin but supplementary material on these subjects may be secured from Government bulletins supplied by the club leader.

3. Problems of feeding with each member bringing samples of the concentrated feeds given the calf in one day. Each member should report on the ration he is feeding and tell the value of each. Scales should be present so that the weights of the feed can be accurately determined. Weights of feed given by quarts can be determined and a table made giving the weight of each quart measure of the different kinds of feeds.
4. A discussion by different members on the value of each kind of feed given, growing feed, fattening feed, and discussing factors that determine balance and efficiency of the different rations for the fattening of cattle.
5. Each club member must keep accurate records of the amount and weight of feed given his calf. Monthly weight should also be entered in the record book. It is important that the calf be weighed at the beginning and the close of the feeding period. As it is not possible to weigh the calves monthly where scales are not available, weights should be estimated in accordance with the U. S. Department of Agriculture table of weight relations to chest measurements as given on page 42 of this bulletin.
6. Equipment for fitting and showing and methods of preparing the calf for show. All tools and equipment for fitting and showing should be brought to the meeting and their use explained. This meeting should be held on a ranch where demonstrations of fitting and showing may be put on by the club members.
7. A meeting devoted to proper selection and judging of beef cattle. Chapter 2 may be assigned as a preliminary study so that each member may know the names of the different parts of the animal and the location of the different cuts of beef. Each member should use a score card to go over his own animal, giving the points of excellence and the points that would be criticized.
8. A judging tour and instruction where different animals are compared. This requires a daylight tour and an instructor familiar with beef cattle.

The foregoing suggestions need not be followed in definite order. Selection of the order of the assignments on reference reading and bulletin material can be determined by the leader of the club as the work of the year progresses. The yearly program of meetings can be changed and varied with additional supplementary material and used when deemed advisable.

Record Book, Record Keeping, and Demonstration Teams

The keeping of records and relating experiences by writing a story of the project from beginning to end is one of the essential and valuable lessons gained from club work. Records of the feed must be kept and recorded in the book supplied by the club leader. Estimates of the gain and weight according to the measurement given in Chapter 10 should be made, entered in the record book and reported at each club meeting. This record should be taken on the same day each month.

Each well-organized club has a demonstration team of two members. Each member of the club has a chance to take part in such a demonstration and gives such as part of the program at one of the regular meetings. Those who are best qualified are usually selected by vote for the demonstration team. Usually the same team is not selected to give all the demonstrations.

Two members constitute a demonstration team. One member is to put on the demonstration while the other assists and also explains to the audience why and how the work is being done. Popular demonstrations put on by the club teams are:

1. Washing and curling a calf for show.
2. The making of a rope halter.
3. Sizing up a beef calf from the standpoint of judging, naming the parts, and giving the locations of the different cuts of beef.
4. Selection and balancing of beef cattle rations for; maintenance, growing, and fattening.
   Reference Readings: *The Idaho 4-H Club Leaders' Manual.*

CHAPTER 2

Judging and Scoring Beef Cattle

Beef cattle are grown and fattened in order to produce carcasses of good, choice, and prime beef. Some cuts are more popular and desirable than others and the student of beef cattle learns to look for animals that produce maximum amounts of valuable cuts. The choice animals from each breed closely approach the ideal. There is more difference in the conformation and build of the medium and choice Shorthorns, medium and choice Herefords and medium and choice Angus than between good and choice steers of all three breeds. Each breed has large numbers of outstanding individuals but unfortunately some of poor and inferior conformation.

The breeder and feeder of cattle needs to know all parts of the animal and their names. Figure 1 shows the parts of the beef animal. These should be learned and named by each club member at some meeting. In addition, cattlemen use a number of

other terms such as type, constitution, finish, and quality. To determine these points the score card may be used to score individual animals and for one club meeting each member should score his steer and report in detail, giving the points of excellence and those that he would criticize.

Reference Reading: *Judging Beef Cattle, U. S. D. A. Farmers' Bulletin No. 1068.*

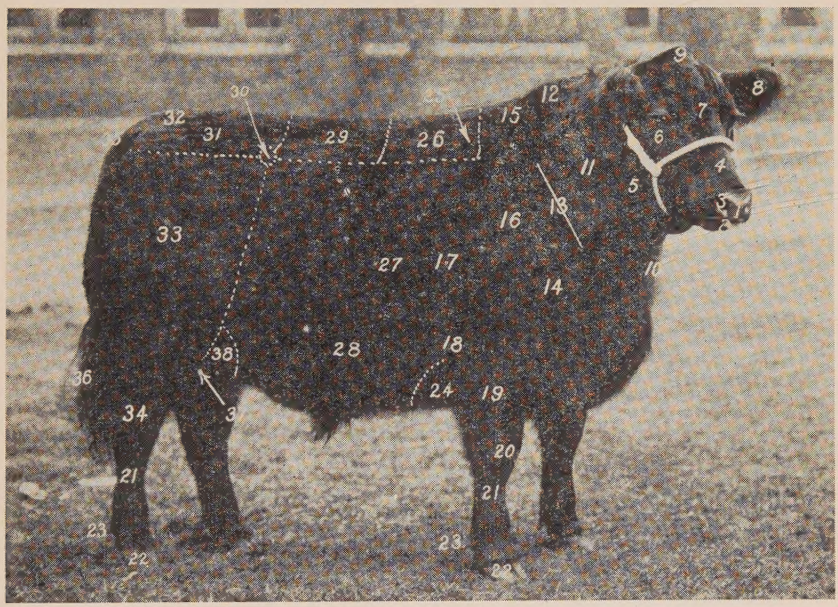
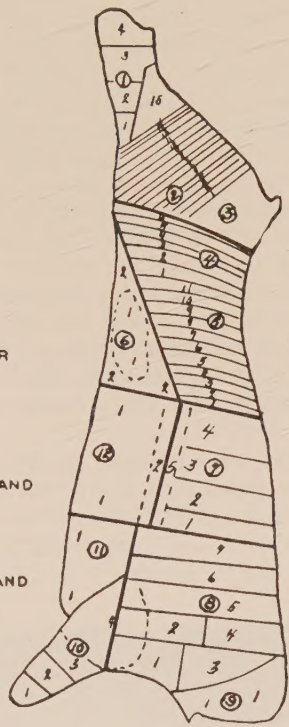


Figure 1.—Parts of the steer.

1. Muzzle 2. Mouth 3. Nostril 4. Face 5. Jaw 6. Eye 7. Forehead 8. Ear 9. Poll 10. Dewlap 11. Neck 12. Crest 13. Shoulder vein 14. Point of shoulder 15. Top of shoulder 16. Shoulder 17. Fore-rib 18. Elbow 19. Arm 20. Knee 21. Shank 22. Foot 23. Dew claw 24. Fore flank 25. Crops 26. Back 27. Ribs 28. Belly 29. Loin 30. Hip or hook 31. Rump 32. Tail-head 33. Thigh 34. Hock 35. Tail 36. Switch 37. Cod 38. Rear flank.

SCORE CARD FOR BEEF CATTLE—STEERS

	Perfect Score	Member's Score	Corrected Score
A. General Appearance—35 points.			
Weight—Score according to age. Starting with 60 pounds, add 60 pounds for each month of age up to 15 months old. Estimated .....lbs.; actual ..... lbs.	8		
Form—Straight top and underline, broad, low set, smooth.	9		
Quality—Fine soft hair, loose pliable hide, dense, medium size bone, free from coarseness.	9		
Condition—Deep even covering of firm flesh; in finished cattle full cod and flank.	8		
B. Head and Neck—7 points.			
Muzzle—Broad, jaws wide, nostrils large.	1		
Eyes—Large, clear and bright with placid expression.	1		
Face—Short and wide, cheeks fleshy.	1		
Forehead—Broad, full.	1		
Ears—Medium size, fine texture, and well carried.	1		
Horns—Fine texture, medium size, and properly curved.	1		
Neck—Short, thick, blending smoothly with shoulders; throat neat with light dewlap.	1		
C. Forequarters—9 points.			
Shoulder Vein—Full and smooth.	2		
Shoulders—Smooth, compact on top, evenly covered with flesh.	3		
Breast—Wide, brisket extending forward.	2		
Legs—Straight, short, wide apart, arm full toes pointing straight forward.	2		
D. Body—31 points.			
Chest—Full, deep, wide, girth large, crops full.	5		
Back—Broad, level, thickly and smoothly fleshed.	8		
Ribs—Long, well sprung, thickly and smoothly fleshed.	8		
Loin—Thick, broad, well and evenly covered with flesh.	8		
Flanks—Deep, full and even with underline.	2		
E. Hindquarters—18 points.			
Hips—Smooth, evenly covered, not prominent.	2		
Rump—Long, wide, level; tail head smooth; pin bones wide apart but not prominent.	5		
Thighs—Thick, deep, broad, full.	5		
Twist—Deep, full and plump.	4		
Legs—Wide apart, well placed, hocks straight, toes pointing straight forward.	2		
Total.....	100		



① **HIND SHANK**
1 TO 3 SOUP BONES
4 - HOCK

② **ROUND**
1 TO 14 ROUND STEAKS
15 HEEL OF ROUND

③ **RUMP**
STEAKS OR ROASTS

④ **LOIN END**
1 TO 6 SIRLOIN STEAKS

⑤ **SHORT LOIN**
1 TO 3 CLUB OR DELMONICO STEAKS
4 TO 11 PORTERHOUSE STEAKS

⑥ **FLANK**
1 - FLANK STEAK
2 - STEWS OR HAMBURGER

⑦ **RIB**
1 TO 4 RIB ROASTS
5 SHORT RIBS

⑧ **TRIMMED CHUCK**
1 & 2 BOTTOM CHUCK ROASTS
3 & 4 TOP CHUCK ROASTS
5 TO 7 CHUCK RIB ROASTS

⑨ **NECK**
1 - BONELESS ROASTS
STEWS OR HAMBURGER

⑩ **FORE SHANK**
1 TO 3 SOUP BONES
4 - SHOULDER CLOD

⑪ **BRISKET**
1 - STEWS OR BONED AND ROLLED ROASTS

⑫ **PLATE**
1 - STEWS OR BONED AND ROLLED ROASTS
2 - SHORT RIBS

Numerals in circles ○ refer to wholesale cuts and major subdivisions of such cuts. Other numerals refer to retail cuts.

WHOLESALE CUTS AND SUBDIVISIONS
ALL PERCENTAGES BASED ON CARCASS WEIGHT

①TO⑥ HINDQUARTER	48.0%	⑦ TO ⑫ FOREQUARTER	52.0%
①TO③ ROUND AND RUMP	24.0	⑦ RIB	9.5
① HIND SHANK	4.0%	⑧ & ⑨ CHUCK	22.0
② BUTTOCK	15.0	⑧ TRIMMED CHUCK	17.0%
③ RUMP	5.0	⑨ NECK	5.0
④ & ⑤ FULL LOIN INC. SUET	20.5	⑩ FORE SHANK	5.5
④ LOIN END	7.0	⑪ BRISKET	6.5
⑤ SHORT LOIN	10.5	⑫ PLATE	8.5
KIDNEY KNOB	3.0		
⑥ FLANK	3.5		

Figure 2—Cuts of beef.

CHAPTER 3

Breeds of Beef Cattle

In buying feeder and fat steers the market grade determines the value. There are four breeds of beef cattle, all selected and developed for desirable beef producing qualities. More difference of grade and type exists between individuals within any one breed than between the best animals of all beef breeds. Prime, choice, good, and medium steers are to be found in all breeds. The best individuals of each breed are of excellent beef type and the selection of good market cattle is based on conformation and finish rather than on the breed. There are qualities and characteristics such as general conformation, color and other traits that distinguish each breed from the others, tending to create favoritism among cattlemen. To some extent, the breed characteristics largely influence individual choice of the breed. As a rule, some breeds may be more gentle than others, but wild and nervous cattle, as well as those of quiet and gentle disposition, may be found in all breeds. The gentleness of cattle is largely influenced by the way in which they have been handled.

Shorthorns. Shorthorns, often called Durhams, are large, rugged cattle that as a breed are quiet and docile. In color they are red and white, sometimes of solid color, but often spotted or roan. The general form is somewhat rectangular with a wide back, a straight top and underline, and good depth of body. Roughness over the

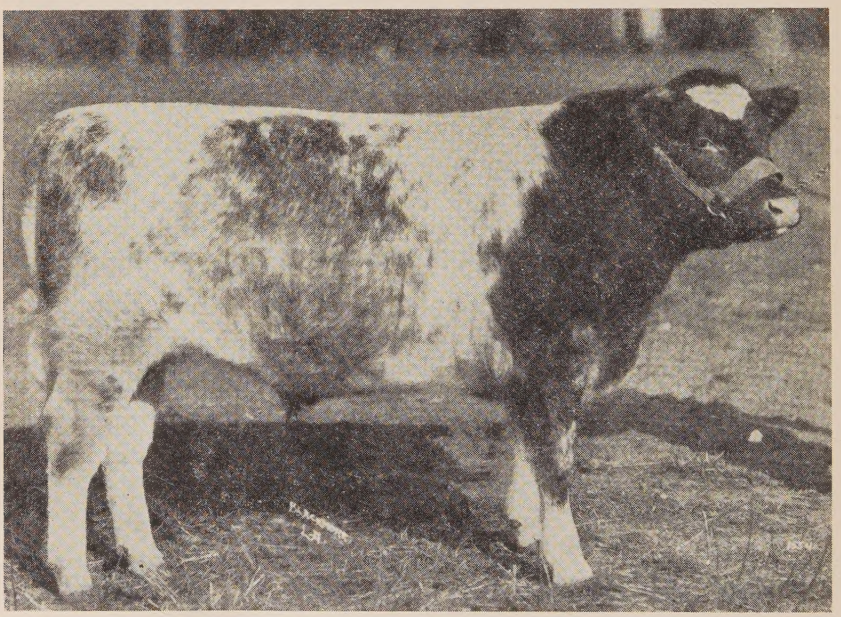


Figure 3—A Shorthorn show steer owned by the University of Idaho.

hips and patchiness over the tail head are to be avoided in the show steer. Generally, they excel in quality of hair and hide. The cows are good milkers, the best of any beef breed.

Shorthorns are extensively grown in Idaho, being especially popular on the farms and ranches where they are spoken of as "the farmers' cow." They are quite adaptable on the range and most popular on the timbered grazing ranges and in sections that use a combination of ranch and range.

Some prejudice exists against the Shorthorn because of the failure to recognize that there are both beef and milking types with some unfavorable crosses of the two. In selecting range bulls and feeder steers, it is necessary to take care that the selection is being made from herds that have been bred and developed along beef producing lines.

Herefords. The Herefords, commonly called "white-faces," are generally more popular and more numerous in the range country. They are good rustlers and grow and thrive on abundant pastures as well as on a hard and difficult range. Color markings are uniform, the body being red with a white head, crest, throat, breast, underline, switch and lower parts of the legs. They are low set, blocky, and compact. When properly handled, they are of a quiet, docile temperament. They are the most numerous of the Idaho range cattle, being found extensively on the lower desert type of sagebrush range, characteristic of the Public Domain, but are also popular on the higher mountainous and forested areas. Because of the fact the milk production of the cows is the lowest of any breed, they are not extensively kept as farm cattle. They are early

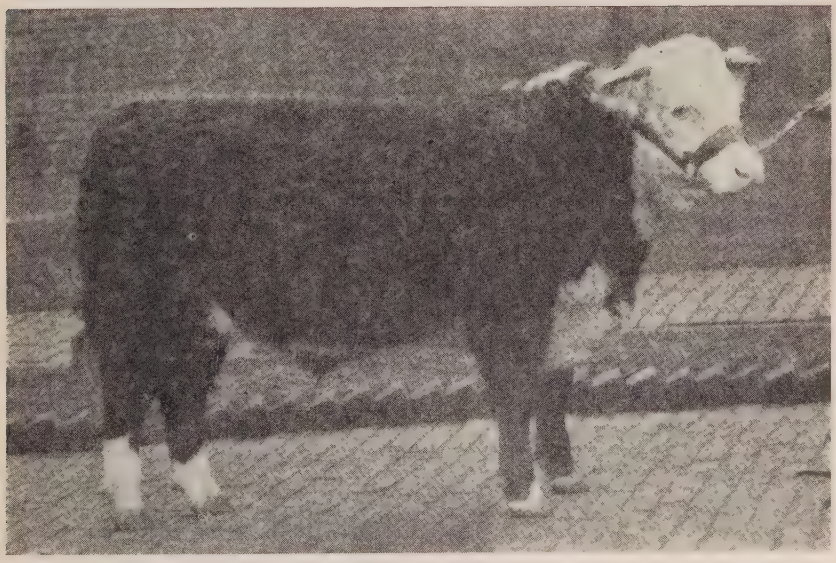


Figure 4—A Hereford show steer owned by the University of Idaho.

maturing and popular in the feed lot, responding favorably to proper feeding and developing into well-finished beeves at any age.

Aberdeen-Angus. The Aberdeen-Angus are low set with smooth bodies, cylindrical in shape. They are polled and solid black in color with occasional white markings on the underline. The steers are early maturing and when well finished produce an excellent carcass of well-marbled beef. The cows are better milkers but not as good rustlers as the Herefords. They are popular on the better ranges with an abundance of pasture. As a breed, they have the reputation of being somewhat wilder and of a more nervous disposition than the Shorthorn and Herefords, becoming especially wild in heavily timbered and brushy ranges, but when properly and carefully handled and fed during the winter, few individuals show the nervous tendency sometimes claimed for them. They are especially popular on the ranches that produce beef on fenced pastures and in the feed lots. Figure 1 gives an illustration of an Angus steer. This picture is of Briarcliff Model, grand champion at the 1933 International Livestock Exposition.

Figure 5—Galloway cattle properly fitted and shown.

Galloways. The other breed of beef cattle, the Galloway, is not common in Idaho and not available to many sections. They are black polled cattle that are low set and deep of body with a body somewhat longer and not as rounding as that of the Angus. They are strong of bone, quite rugged and able to withstand privation of summer drouth and winter cold better than any other breed.

Reference Reading: *Beef Cattle Breeds for Beef and for Beef and Milk U. S. D. A. Farmers' Bulletin No.* 1779

CHAPTER 4

Market Grades and Selection

Idaho Beef Cattle

In round numbers, the Idaho beef cattle population is 500,000. Of this number, 14,000 are purebreds and the remainder grades. The purebreds are kept on the ranches throughout the year. The grades are wintered on home ranches and ranged during the spring, summer, and fall on private land, on the Public Domain, and in the National Forests. Annual shipments of market cattle of all classes and grades average around 185,000 head. A 15-year average of the distribution of the Idaho cattle to market shows 42 per cent shipped direct to market from summer ranges, 20 per cent from fall pastures, while 38 per cent are finished in Idaho feed lots.

Idaho range cattle consist of three breeds: Herefords, Shorthorns and Aberdeen-Angus. The choice of cattle to feed depends not upon the breed, but upon the type, conformation, and general beef characteristics that indicate good feeding qualities. Individual excellence and not the breed nor color determines market grades. Most of the requests for assistance in selecting club calves specify the breed, a difference of opinion based upon previous experience, leading some to believe one beef breed excels the other. As a matter of fact all grades of feeder and fat steers, ranging from medium or even common to choice and fancy, are found among cattle of all beef breeds. Instead of trying to select cattle by breed, ex-

Figure 6—Prime grade slaughter steer.

perienced cattle feeders select by conformation, type, and condition which determine the grade and market prices of both feeder and fat steers.

Market Grades of Beef Cattle

There are seven grades of slaughter steers: prime, choice, good, medium, common, cutter, and low cutter. The first three grades consist entirely of well-bred cattle of the beef breeds. The last three

Figure 7—Choice grade slaughter steer.

consist of cattle of inferior breeding, usually showing a preponderance of dairy blood. The majority of Idaho steers shipped to market grade from medium to choice.

Prime steers are beef cattle of good comformation with a high degree of finish (*Fig.* 6). In conformation the animal is deep, broad, blocky and compact, well-proportioned, thickly and evenly covered with flesh that feels smooth and firm to the touch. The head is short and broad, the neck short and thick, the legs short and wide apart, and the top and underlines straight. This grade of steers, usually spoken of as show steers whether appearing as individuals or in carload lots, is scarce on the market.

Choice steers are much more common than prime steers. They are of good conformation and well finished *(Fig. 7)*. They are held one grade below the prime because of some fault in conformation, quality, finish or evenness of flesh which keeps them below the top grade. The best of the steers exhibited by club members are usually of this grade, comparatively few ever grading prime. However,

most club steers must be classified as good rather than as choice or prime.

Good market steers lack somewhat in conformation, quality, or finish, (*Fig.* 8). They are of good beef breeding with conformation, quality, and finish above serious criticism, but not approaching the ideal near enough to rate as choice or prime.

Medium steers vary somewhat in conformation, smoothness, quality, or finish, (*Fig.* 9). They may be somewhat narrow and upstanding, or rough and show lack of thick fleshing. Many well-bred steers of good conformation must be graded as medium, merely for the reason that they are not properly finished and carry insufficient flesh to enable them to be classified as good or choice.

Grades of Feeder Calves

The grades of feeder calves are determined according to their ability to feed out into classified market grades. The steers grade from common to fancy. Fancy feeder calves are very rare, the highest percentage being found in purebred herds, though limited numbers will be found in any good range herd. This class is so rare that the club members in search of feeder calves must confine their selection mostly to the grades of good and choice. In club work, so much individual attention is given and so much work done with

Figure 8—Good grade slaughter steer*

* Figures 6, 7, 8, and 9 courtesy U. S. Department of Agriculture.

Figure 9. Medium grade slaughter steer.

the feeder cattle that the grades of common and medium should be avoided. In commercial feeding the lower grades are bought at considerably lower prices, in which case they may be as profitable to feed as the better grades, the producer having carried the loss. The lower grades of cattle are not finished to as high a degree as the higher grades for the reason they will be graded down on the market and bring lower prices regardless of condition.

Securing Calves for Local Clubs

Cattle move from the Idaho ranges during the fall season, the main movement starting in September and ending in November. The majority of Idaho calves are born in the spring, from March to May. Arrangements for buying should be at the time when the cattle are moving, rather than out of season periods which the club may consider more convenient. It is best to organize and arrange for a club to purchase when there is a wide selection available and the cattlemen are ready to sell. Requests for assistance in locating and selecting good calves are more numerous in seasons when the cattle are not moving than during the heavy fall marketing period. It is impossible to select and transport good feeder cattle when the herds are snowed in on the home ranch during the winter or widely scattered over the spring and summer ranges.

In some sections club members insist on buying beef calves in the spring. At that time the choice must be confined to yearlings,

fall calves, and newly born spring calves. There are only two methods of buying baby calves. In a beef herd it is unreasonable to expect a cattleman to sell young calves without the mother. If baby calves must be secured in the spring, it is necessary to buy veal calves out of a feed lot where cows and heifers are being fattened for market or to arrange to buy the mother with the calf and take the two home together.

Selection of Club Calves

Club members who desire to purchase cattle should pool their orders and buy in cooperation with the cattle feeders in the community. In going out to the fall round-up or to the cattle on ranch pasture and in local loading yards, prospective club buyers will find steers that vary greatly in type, conformation, disposition, and fleshing. They will be looking for cattle with short broad heads and a broad muzzle. The legs should be short and well placed, far apart. It will be necessary to consider only calves that are low set and blocky, that have short necks, and straight top and underlines. Any tendency to coarseness or roughness or a lack of depth in the body and hind quarters should be avoided. A calf that is high headed, wild, and not content to mingle with the herd should

Figure 10—Choice, good, and medium steers may be found in all breeds of beef cattle. (Courtesy Extension Department, State College of Washington).

not be selected for club work. The selection of the proper type of calf is half the secret of satisfactory club work.

In selecting and sorting cattle, there is no substitute for experience. A club member may be quite familiar with the desired characteristics of a good feeder steer but will become confused when entering a corral filled with cattle that are so uniform in breeding and color that all seem identical. In the selection of the feeder steers, the assistance of an experienced cattleman or cattle feeder should be secured.

The calves that are selected for club work should be cut out and weighed separately to each member at the prevailing price of this class and grade. If not desired to start club work at the time the calves are secured, they can be kept and fed together until the members desire to start individual work. It is better, however, to secure the calves in the fall, take them home, break to lead and start feeding. The calves secured from the range will usually be from 5 to 7 months old and will weigh from 350 to 450 pounds.

When the calf arrives home he will be somewhat timid and not used to seeing men on foot. The best place he can be kept is with gentle farm calves. The calf will be more contented and do better if there are more with it. It is an excellent plan for each club member to have from 2 to 5 calves, but, if this is impossible, it is well to keep the club calf with other calves on the ranch.

CHAPTER 5

Feeds

The natural tendency of the calf is to grow. The problem of the club member is to feed the calf so that it not only grows but also increases in thickness of flesh and becomes finished. If the calf is to be fattened, the proper kinds and amounts of feeds must be supplied in an orderly, systematic manner.

The feeds for beef cattle are divided into two classes; roughage and concentrates.

Roughage consists of the coarser feeds, such as grass, hay, straw, silage, and roots. The roughage may be dry, as cured hay or in a succulent form such as pasture, silage, roots, and wet beet pulp. A limited amount of succulent roughage is of value in keeping the digestion in order and the calves thrifty and healthy. The roughages are bulky but are the common feeds used for growing out calves to stocker yearlings. Young cattle will not fatten on roughage alone, but will grow and thrive providing there is not a shortage of essential nutrients.

Concentrates consist of the grain and the mill by-products. They contain a high percentage of carbohydrates (sugars and starches) or materials that tend to produce fat. Finishing of feeder cattle depends upon the proper combination and use of roughage and concentrates. Mature cattle are able to handle large quantities

of rough feed to advantage. The calf has rather a small capacity. If fed too much hay or other roughage, it will consume insufficient grain to make satisfactory gains and become finished. Occasionally a calf may like a good grade of alfalfa hay so well that if given unlimited amounts he will not eat grain. In this case, it is necessary to limit the amount of hay in order to induce the calf to eat the concentrates.

Composition of Feeds

The value of a feed depends upon the palatability as well as the amount of digestible nutrients it contains. These nutrients are protein, carbohydrates, fats, minerals, and vitamins. Protein is necessary for forming the lean meat, the tissues and organs, and developing muscles. Carbohydrates and fats provide heat and energy with the surplus stored as fat. Minerals contribute to the growth of the bones and are also necessary in the normal performance of important body functions. Vitamins are necessary for growth, reproduction and for the animal's general thrift and well doing.

The Balanced Ration

A balanced ration is simply one that supplies the necessary elements in proper proportion. Some feeds carry an excess of protein, others of carbohydrates and fats. Alfalfa, clover hay, cull beans, peas, cottonseed, and linseed oil meal are all high protein feeds and are utilized to supply this part of the ration. Common carbohydrate feeds are corn, barley, wheat, syrup and dried beet pulp. If the ration contains an excess of either protein or carbohydrates, the ration is unbalanced and the excess is thrown off as body waste. A skillful feeder tries to use a combination of feeds that produces efficient body development without excessive waste.

The ration should be made up in accordance with the feeds available and the constituents of the feed supply. If the roughage consists mostly of alfalfa or clover hay, concentrated protein feeds such as cull peas or cottonseed cake are not as necessary as when cattle are eating considerable straw, silage, and wild or grain hay. The providing of feeds in proper proportion is not difficult but should be checked with the local leader at the start and before any radical change is made.

A ration will vary according to the purpose for which it is intended. A narrow ration means one that has a rather high proportion of protein to carbohydrates and fats. Such a ration is more beneficial for breeding and growing than for fattening animals. Animals that are being fattened are fed a comparatively wide ration, meaning one having a fairly high proportion of carbohydrates and fats to protein.

Minerals

While minerals are essential, the only one usually necessary to supply is salt. This comes in a variety of forms and should be kept available at all times. While a variety of minerals are essential and cases of mineral deficiency are occasionally found in the feed lot, common Idaho feeds are rich enough in minerals to supply all

requirements. For a number of years, the Idaho Agricultural Experiment Station has experimented with the mineral requirements of feed lot and stocker cattle and finds that the usual ration is adequate. When a mineral deficiency is suspected in the feed, a mixture of 2 parts of steamed bone meal and 1 part salt may be kept before the cattle at all times. However, this mixture will not take the place of salt. Results at the Caldwell Branch Station show that cattle do better when the salt and mineral mixture are taken separately, an excess of mineral proving detrimental.

Salt should be given separately and not mixed with the feeds.

Vitamins

During winter feeding the lack of proper vitamin constituents of the feed sometimes results in lack of thrift of the cattle. Sunshine eliminates some of the trouble. Pasture grass, green legume hay, yellow corn, and carrots are all rich in necessary vitamins.

The effect of a lack of vitamins is more evident in sections where roughage consists of wild and grain hay than in sections where alfalfa hay is produced and fed in abundance.

Advantage should be taken of the winter sunshine and if vitamin deficiency is suspected should be remedied by adding vitamin rich feeds to the ration.

Selection of Feeds

A calf at weaning time has milk fat, and it is the task of the feeder to change the calf from milk to a hay and grain diet without losing weight. The calves should be started on grain, gradually using crushed or rolled oats, and at this time given all the good quality hay they will consume.

The ration for the calves should be based upon the supply of feed on hand. Rolled or ground oats and wheat bran, free from flour, are safe feeds and one or the other should be used throughout the early part or all of the feeding period. The calves should be started on oats, giving 1 pound a day at first and gradually raising the amount to 4 pounds. By the time the calf is consuming 4 pounds of oats per day, a change to a combination of oats and barley, wheat, or corn can be gradually made. This is done by first replacing 1 pound of the oats with 1 pound of ground or rolled barley or wheat. When this combination is consumed in a satisfactory manner, the ration may be changed to half-and-half, and as time advances the wheat or barley can be raised so that only one-fourth or one-fifth of the combination consists of oats. Bran may be substituted for the oats at any period and gives equally satisfactory results.

As a calf increases in size and ability to utilize grain, the ration can be increased. In commercial feeding, Idaho cattlemen generally try to have a calf eat 1 pound of concentrates for each 100 pounds of live weight of calf; that is a 400-pound calf would be eating 4 pounds of grain; a 600-pound calf, 6 pounds; and a 900-pound live weight, 9 pounds of grain. In every feed lot are some individuals that will consume larger amounts of grain than the average. Some cattle

will use twice as much grain as others, many show calves being fed as much as double the grain ration usually supplied for each animal in a commercial feed lot. All cattle will consume more of some grain than others. Cattle will consume larger amounts of corn than of either wheat or barley.

In all cases when the grain is increased it must be done carefully and gradually. Throughout the early part of the feeding period, the grain may be fed twice a day. During the latter part of the feeding period, when it is desired that large quantities of grain be consumed, it may be fed three times a day. As the amount is increased, the grain should be fed before the roughage. No more grain should be given than the calf will clean up in 30 minutes. If feed is left in the trough, the amount should be reduced to the amount that will be consumed in a limited period. Left-over feed should always be removed from the trough and used for other stock.

Occasionally a steer will eat the grain too rapidly. This is best overcome by mixing the grain with a form of roughage, such as chopped hay, silage, or chopped roots.

Rations that will be satisfactory and on which a calf should thrive and fatten may be made up as follows:

Barley or corn or wheat or a combination of two or all
Mixed with
One fourth or fifth ground oats or bran (by weights)
And fed with
Good quality alfalfa or clover hay.

This ration can be improved by the addition of 3 to 5 pounds raw potatoes or carrots or corn silage or 10 pounds wet beet pulp. If a succulent feed is not available, the palatability and safety of the ration can be improved by adding 1 or 2 pounds of dried beet pulp. Where available, 1 pound of beet or cane syrup may be fed to improve the palatability of the ration.

If grain hay or wild hay is fed, the ration may be lacking in protein and perhaps in vitamins. The protein may be supplied in the form of cottonseed meal, linseed oil, or cull peas. The choice between cottonseed and oil meal will depend upon the ration. If part of the ration consists of alfalfa hay and syrup so that it is slightly laxative, cottonseed meal will give more satisfactory results. If the ration consists of grain hay or wild hay and is somewhat binding or constipating so that the calf seems to lack thrift and the hair has a rough appearance, linseed oil meal will give best results. Both cottonseed and oil meal are fed in limited quantities from ½ to 1 pound per day.

Preparation of the Feed

Musty or spoiled hay should not be fed. If necessary to feed poor quality hay, it should be fed long in liberal quantities and the waste removed daily. Chopping, grinding, or adding syrup to poor quality hay will increase the consumption but will not improve the quality of the hay or the gains of the cattle. Good

quality hay may be fed chopped or ground. If fed chopped, the coarse, rough stems that are refused should be removed daily.

Barley, wheat, and oats should be fed ground or rolled. Corn is sometimes fed whole but is preferably fed cracked. When fed in combination with barley or wheat, the corn should be fed ground or cracked.

Figure 11—Commercial cattle are fed regularly and kept comfortable.

Potatoes and roots should be fed sliced and may be fed with the grain.

The only feeds that are ever cooked to advantage are barley and wheat. Cooking barley swells the volume, increases consumption and decreases the tendency to bloat. By cooking the entire amount of barley given, the amount consumed is sometimes increased. Occasionally the entire amount of barley fed is cooked, but more frequently only 1 or 2 quarts of cooked barley or wheat is given at one feed. Cooked barley will sour rapidly and should be fed the day it is cooked.

CHAPTER 6

Feeding

The Duty of the Feeder

It is impossible to lay down hard and fast rules for the fattening of cattle. The English have a saying, "The eye of the master fattens the cattle." In feeding, it is necessary to watch the animal to observe that his eye is bright, the hair glossy, and the hide loose and pliable. Listlessness, dull eyes, a slow appetite, rough, coarse hair and a tight hide are indications that the

animal is not thriving. Digestive disorders are indicated by bloating and scouring. The skillful feeder watches the droppings of the cattle to see that the digestive functions are being carried on properly without constipation or scouring. If the club calf is not doing well, the local club leader or County Extension Agent should be consulted and will be able to offer suggestions for the proper remedy.

Each year some good feeder calves are fed improperly, often foundered at the start on grain. Such calves are spoken of as "stalled." Once this has happened, it is difficult to properly fatten the animal.

Complaints of the refusal of calves to consume proper amounts of grain are numerous. If the calf goes off feed, it may be necessary to build up the grain ration gradually. The use of bran or oats at this time is desirable. Dried beet pulp fed with the grain is beneficial, from 1 to 2 pounds per day mixed dry through the grain ration enabling the cattle to consume rather large quantities of grain without going off feed. A pound of beet or cane syrup each day may be beneficial.

Regularity and Cleanliness

The thrift, growth, and welfare of the calf depend not only upon the proper balance and combination of the feed, but also upon living quarters and the method of feeding. To prevent a calf from becoming too paunchy, the hay should be fed three times daily. Larger amounts of grain will be consumed when fed before the hay. If there is a tendency towards too rapid consumption of the grain, it is well to feed in combination with a small amount of chopped hay, corn silage, roots or beet pulp.

The feed troughs must be kept scrupulously clean. Any grain remaining after 30 minutes should be removed and a smaller amount given the next feeding. Waste hay should be removed daily. Large amounts of hay should not be fed at one time. Spoiled or soured feed remaining in the troughs and feed bunks will lessen the appetite and lower the gains.

Cattle that are thriving and making rapid gains lie and rest a good part of the time. It has been estimated that cattle forced to stand in deep mud require 40 per cent more feed to produce each pound than those which are provided with a comfortable bed. While all commercial cattle are fed in the open, a shelter with a good dry bed should be provided for the club calf. In the summer a box stall that is kept dark in the day time is most satisfactory.

Unlimited exercise is detrimental but not as harmful as no exercise. In the winter, exercise may be secured by turning the calf out into a sunny corral during the day. In the summer, the calf can be kept in a shaded box stall during the day and turned out on pasture over night. The ideal pasture is one where the feed is short so that the steer intended for show purpose is able to get but a small amount of green feed.

Regularity in feeding is essential. The feeding should be done at the same identical time, morning, noon, and night. Feeding ahead of the regular schedule will result in loss of appetite, while feeding at a long period after the accustomed hour will result in digestive disorders.

The water should be fresh and pure throughout the year. In extremely cold weather it may be advantageous to warm the water, rather than to force the calf to drink ice water. Insufficient ice water is consumed to supply the body needs.

Use of a Nurse Cow

A calf is more difficult to fatten than older cattle. Weaning time is a critical period. In commercial feeding, nurse cows are not used. At many of the livestock shows appear fat yearlings that have been kept on a nurse cow for the entire period. This custom is becoming unpopular on account of its impractibility; hence, some shows now prohibit the use of a nurse cow. Some livestock show regulations require club calves to be weaned 60 days or more before the show.

It is much more practical to wean the calf and fatten on hay and grain than to use the nurse cow throughout the fattening period. However, this is difficult and requires skillful feeding. At the livestock shows, many a good calf stands down the line, merely because those standing above him have been kept on a nurse cow for 9 or 10 months; hence carry more finish. A much higher finish is required on show calves than on commercial cattle. It is practically impossible to get a calf too fat. In the show ring, much attention is given to finish, usually as much as to conformation and type, and many calves fat enough to grade high and satisfy the exacting trade as desirable slaughter steers may stand below calves of less desirable conformation but carrying a higher degree of finish. At the present time, the custom of keeping show calves on a nurse cow until they are 9 or 10 months old is so common that perhaps it should be regarded as a necessary evil.

In some cases calves start readily on a nurse cow. This is especially true of baby calves. With calves 5 and 6 months old, it may be difficult.

Some cows will adopt a strange calf readily. Others will resist and may drive the calf away by bunting and kicking. If this happens, training the calf to nurse will be a difficult task.

In order to properly start the calf on a nurse cow, the cow should be tied up short and hobbled to prevent kicking. This method should be used until the cow adopts the calf as her own.

Often a calf is timid about nursing a strange cow. In this case, it is best to keep the calf off feed for 12 hours. If it does not start to nurse readily, milk is squirted into its mouth. Some herdsmen follow the system of rubbing the teats with saliva from the mouth of the calf.

The calf may be kept on the nurse cow until shortly before show time unless regulations require weaning at a specified time.

CHAPTER 7

Fitting and Showing

Preparing for the Show Circuit

When the steer is led out in the show ring he should look his best. The skin should be clean, the hoofs trimmed and neat, the horns polished, and the hair curled. If the steer is to show his good points, he must be trained to stand in the best position.

A steer that is not gentle and does not lead well is difficult to show. Too often this is neglected so that in every show ring may be found boys who are trying to train a steer to lead and show well. This is too late and if the boy does not show evidence of having given care, time, and attention to his steer, the judge cannot be expected to spend time in trying to guess how good the steer might be if properly trained and shown. An unruly, untrained and unkempt animal shown in a careless and slovenly manner may be a good slaughter steer but can never win in a show ring.

The sooner the calf is trained to lead the better. A strong halter that properly fits the animal is necessary. If unruly and hard to handle, it should be tied short with its head up until it ceases to fight the halter. While being trained, it is well to lead it around in the barn or in a small corral. It is important that the calf never be permitted to break away. In the show ring it is a common sight to see a steer break loose from the owner, a habit that was formed in the early stage of training.

Time and patience are necessary to properly train show cattle. Once a start is made, they should be led regularly, preferably every day. Training cattle to stand so that they show to best advantage should begin a month or 6 weeks before the show. The first step is to get them to like being handled All cattle cannot be shown alike. The skillful herdsman studies the position in which the animals show to best advantage and then trains them to stand this way. This can be done by working with them for a short period every day until each animal learns what it is expected to do. When visitors arrive, the club calves should be led out and shown to them with the request that they come and feel the covering, smoothness and evenness of flesh, and pliability of the hide.

Washing and grooming should be started long before the show. Washing is one of the first steps and is done with tar soap and water, using a brush to scrub until all the dirt has been washed from the hair. After washing, the soap suds and surplus water are removed with the back of a scotch comb or a curry comb and the hair brushed down with heavy brushes. The tail is washed out and then combed. To make an attractive switch, the tail is braided the night before the show and combed out the following morning.

The calf should be thoroughly groomed and brushed each day for several weeks before the show. This removes the dust, dirt, loose hair and improves the handling qualities.

Equipment for Fitting and Showing

For washing and grooming: A galvanized pail, a bar of tar soap, a cupful of creosote, two brushes (one fiber and one bristle), a circular curry comb and a straight or scotch comb *(Figs. 12 and 13)*

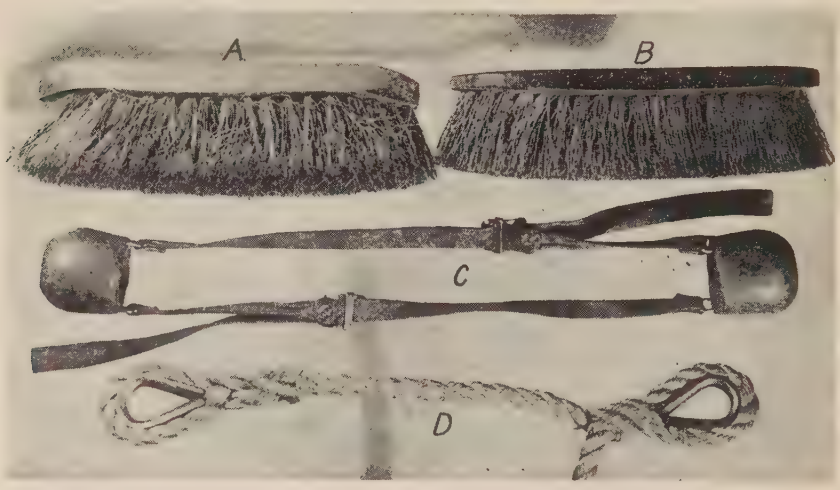


Figure 12—Equipment: a. Soft fiber brush b. Stiff fiber brush c. Adjustable horn weights d. Use of honus in rope halter.

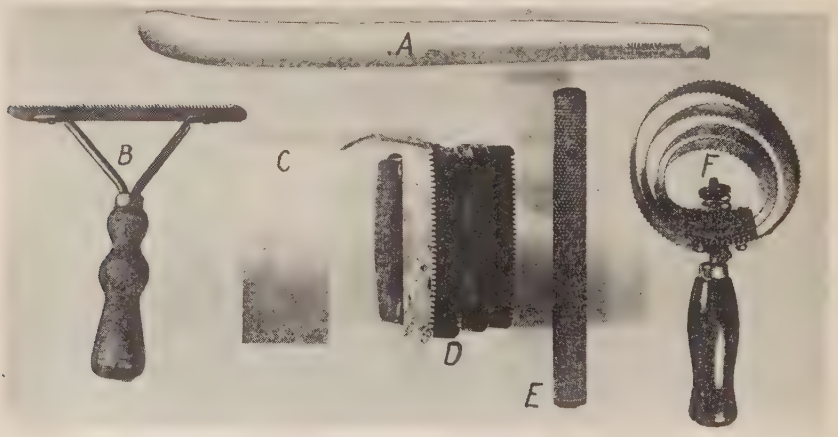


Figure 13—Equipment: a. Water scraper b. Scotch comb c. Horn scraper d. Lining comb e. Horn rasp f. Circular curry comb.

The first step is a thorough washing.

After washing, rinse off all soap with water. Scrape off the soap suds. In the last rinsing use one cup or dip to 4 gallons of water. The purpose of the dip is to aid in curling the hair.

Braid the switch of the tail into small three-strand braids while still damp and leave until shortly before time for showing, then unbraid and brush out.

A heavy straight comb (a scotch comb) is used to part the hair down the middle of the back. After the hair is parted and combed out to the full width of the back, the boys with steers of different breeds may follow different systems of grooming.

The Shorthorn showmen will be using a straight curry comb with every other row pounded down flat or a liner. They will start in at the tail head and draw a line just along the edge of the back. They will then draw parallel lines from back to front, 1 or 1½ inches apart all along the sides of the body and down onto the legs. After the lines are made, the hair will be brushed upward *(Fig. 14)*.

The boys with Hereford steers may possibly be using the same system as the Shorthorn showmen but will possibly be using a round curry comb to wave the hair *(Fig 16)*. The comb will be used upside down, making the marks with the first row

Figure 14—A Shorthorn steer lined preparatory to combing with a scotch comb.

of teeth. Starting at the edge of the back, short curls will be made straight down the sides.

The Angus showmen may be fitting the same as the boys with the Shorthorns or the hair may be so short and fine that it cannot be curled. In this case, after the hair is parted along the back it will be brushed down the sides. A flannel cloth with a few drops of vegetable oil will then be taken and used to rub the calf so as to give a soft glossy appearance. A popular and an attractive way of fitting an Angus is to curl the hair on the hind quarters from the hip back and over the shoulder forward leaving the sides smooth.

Some showmen vary the hair designs in different ways. Occasionally some of the hair is waved over the loin or brushed up over the tie in the back. Some herdsmen may curl the hair on the sides by first making the lines diagonally, from top line to under line, first from front to rear and then from rear to front forming diamond shape designs along the side. After these lines are made the hair is brushed upward the same as on the straight lined designs.

Some cattle are fitted without using lines or designs. After washing, the hair is brushed down and then combed up with a scotch comb *(Fig. 15)*.

Figure 15—A Shorthorn steer fitted by brushing hair straight down and then combing upward with a scotch comb.

Clipping

The tails of all breeds should be clipped. The start should be made at the bottom of the fullness of the twist and clipped up to the tail head. Clipping at the tail head is not uniform for all cattle. The conformation of the animal is noted and clipping done so as to make an even, neat blend that will give the smoothest and neatest appearance.

The heads of Angus and of other polled cattle are clipped. The heads of steers that have been neatly dehorned are some-

Figure 16—A short haired Hereford steer partially waved with a circular comb.

times clipped. The heads of cattle shown with horns are not clipped.

Clipping of the head extends back about 3 inches from the ear. This point can be determined by imagining a string tied around the neck. The ears are not clipped. Shorthorns shown with horns have the hair parted in the center of the face and brushed out. The hair of horned Herefords is combed and brushed straight down on the face.

Care of the Hoofs and Horns

The hoofs will usually be all right, especially if the stall has been well bedded and the calf given sufficient exercise. If the hoofs are too long, they should be neatly trimmed. This is usually done by cutting off the ends with a chisel or a sharp

hatchet held at the desired point and struck with a mallet *(Fig. 17)*. Often, however, this does not smooth and level the foot properly. The best method of trimming the feet of show cattle is to fasten the animal securely along the side of a fence and lift the foot for trimming. Some herdsmen prefer to have the calf lie down by use of a rope around the neck, looped around the chest at the front flank and around the body at the rear flank and pulling on the end of the rope which lies along the back. The hoofs should be cleaned and are sometimes polished.

Cattle that were neatly dehorned when young are quieter and feed out to advantage in the commercial feed lot. Exhibitors of show cattle differ on the opinion of showing cattle with horns. The exhibitor of carload lots of show cattle prefers to have all neatly dehorned. Some exhibitors of individual show steers prefer to exhibit animals with attractive horns.

The most attractive horns turn downward and forward. If the horns are growing straight up or outward, they can be properly trained by horn weights. Special horn weights in different sizes are secured for different aged cattle. Half-pound weights are best for young cattle under 500 pounds. If the horn weights are too heavy, they may form a downward bend at an angle rather than a curve. A special type of horn weight will pull the horns forward as well as down.

In showing cattle with horns, the horn is scraped and polished *(Fig. 18)*. The horn is first scraped with a rasp or a piece of broken glass and smoothed with fine emery or sand paper. It is then polished with a flannel cloth. A few drops of oil improves the luster and appearance of the horn.

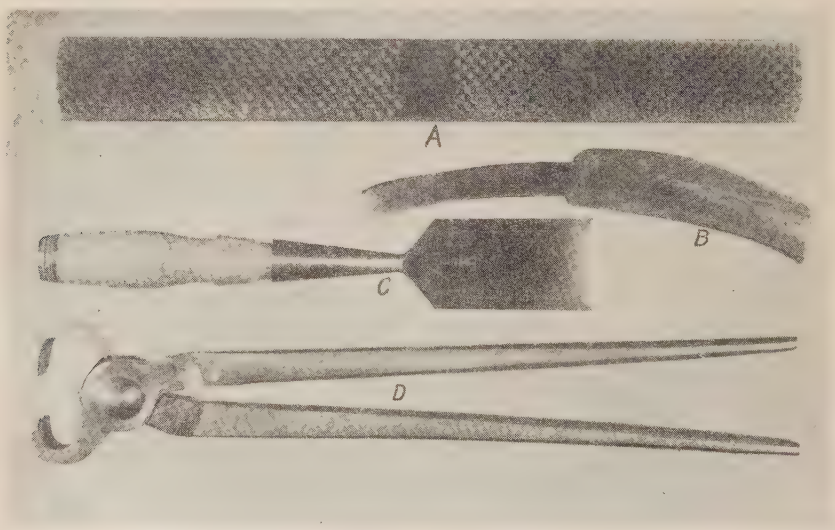


Figure 17—Equipment for trimming the hoofs: a. rasp b. farrier's knife c. chisel d. nippers.

Shipping

Commercial cattle are shipped in ordinary 36-foot stock cars, thirty 900-pound yearlings or twenty-seven 1100-pound two-year-olds to the car. Show cattle are loaded lighter with not more than half the number of commercial cattle to the car. Instead of the ordinary stock car, show herds are often shipped in box cars. When the box car is used, one door is kept closed and a gate placed in front of the other door which is kept open. A railing is constructed along the side of the car and the cattle tied up far enough apart so that they may lie down.

Feed for the cattle en route and at the show is taken in the car. A 50-gallon water barrel is also taken and wired to the side of the car near the open door.

On shipping day, the calves should be fed the morning feed of roughage but a very light grain ration. The caretaker takes his own concentrates since it is important that change in feed is not made at this time. On the road, only half of the grain to which the calf has been accustomed should be given.

Figure 18—Illustrating some steps in polishing horns. The rasp (A) or wood scraper (B) are used for removing the rough places on the horn. Emery cloth (C) and a woolen cloth (D) are used for polishing the horn.

Cattle that are shipped long distances become very tired and ordinarily do not get back on full feed until the third day after arrival at destination point. It is advisable to load so that the cattle will arrive at the show 2 or 3 days before appearing in the show ring. It is difficult to show a tired steer to advantage. An additional advantage in arriving early is that there is ample time to properly prepare the calf for the show ring.

In the Show Ring

The cattle must be trained to lead and show long before they appear in the show ring. They should be properly fitted with rope or leather halters that will tighten under the chin on pressure in order that they may be controlled if becoming frightened and obstreperous. When posed, they should stand squarely on all four feet. A show stick is used for this purpose. Most arenas are level but cattle show better with their front feet slightly higher than their hind feet and if the ground is uneven, cattle are usually shown in this manner.

The showman stands on the left side of the animal with the halter rope coiled. It is not necessary to watch the judge or the other cattle. A good showman gives undivided attention to the animal he is showing. If not standing squarely, the show stick is used to get the legs in p'ace. To move a foot backward, it is touched between the toes. If the foot is too far back, it is moved forward by touching the back of the foot with the projection or "brad" on the side of the show stick. If a steer is letting his back sag, he is scratched gently on the belly with the "brad."

The better cattle will win over those that are inferior. However, in every show ring are a large number of animals closely approaching the ideal. The final decision between two or more top animals is often difficult. When this occurs, showmanship is important and sometimes one animal may win over another merely because it was well shown against animals carelessly shown.

The judge will finally move the winning animals up towards the top of the classes. Inexperienced herdsmen notice this and try to move their cattle into this favored place on the theory that the judge does not like to shift animals. This does not insure winning and is of no advantage. Courteous and experienced showmen line up the animals as they are led into the ring, depending upon the judge to give the proper rating.

The duty of the exhibitor is to give undivided attention to the animal he is showing. Experienced herdsmen watch the animal to see that it is showing to best advantage with the feet properly placed and the head in the position that the animal shows best. Common mistakes made by club members are to watch the judge, look around the entire arena and perhaps forget his position and lean on the shoulders of the steer.

In the show ring there is much at stake. It is a market day for the steers that have been cared for over a long period. In

the arena will be a long string of cattle that have been carefully selected and well cared for. All have been brought into the show ring to determine which animals are best. Not all can win. The exhibitor who is alert, courteous, and pleasant, can appreciate the merits of animals owned by others, and is a good loser makes many friends.

CHAPTER 8

Making a Rope Halter

A calf handles much better on a rope halter than on an ordinary strap halter such as you use for horses. A regular halter has a slip chain under the chin.

The making of rope halters is a good assignment for one of the early club meetings. Each member should bring 12 to 14 feet of a ⅜- or ½-inch three-strand rope. Three splices are required. For this purpose a wooden peg made from a piece of hardwood, ½ inch in diameter and 6 inches long and pointed at one end is useful. This peg is known as a marlin spike. A large spike nail may be used as a substitute.

The size and length of rope halters depend upon the size of the animal. The following table gives the diameter and lengths of the ropes ordinarily used and the length of the nose piece. In making the halter, the only permanent dimension to be made is the nose piece which varies according to the size of the animal, as indicated in the table.

Table 1. Dimensions for making rope halters.

	size of rope (inches)	Length of rope (feet)	Length of nose piece (inches)
Sheep	¼	10	10
Calf	⅜ to ½	12 to 13	12
Medium cattle	½	13 to 15	13
Large cattle	½	14 to 15	18

First lay off 6 inches from the halter end for the eye splice. Then lay off from 10 to 18 inches, depending upon the size of the halter desired, from this point for the loop splice. The points are determined by tying a string around the rope *(Fig. 19-a)*. The loop splice should be made first. This is made one complete twist beyond the second string. Two strands of the rope are raised by the marlin spike. One end of the rope is then passed through this opening *(Fig. 19-b)*. Pull the rope through to form the loop *(Fig. 19-c)*. Next lift two strands of the rope, pass the other end of the rope through and pull tightly to form the completed loop *(Fig. 19-d)*. The completed loop should appear as in Figure 19-e.

To make the eye splice, untwist the short end of the rope 5 inches and make a loop with the strands in the position as shown

in Figure 19-f. In this position, the middle strand runs along the top of the rope while the two outside strands straddle the main rope. The marlin spike is then used to raise one of the strands and the middle strand passed under it diagonally to the right. The main rope is then turned to the left and the left strand is placed under the next strand of the main part of

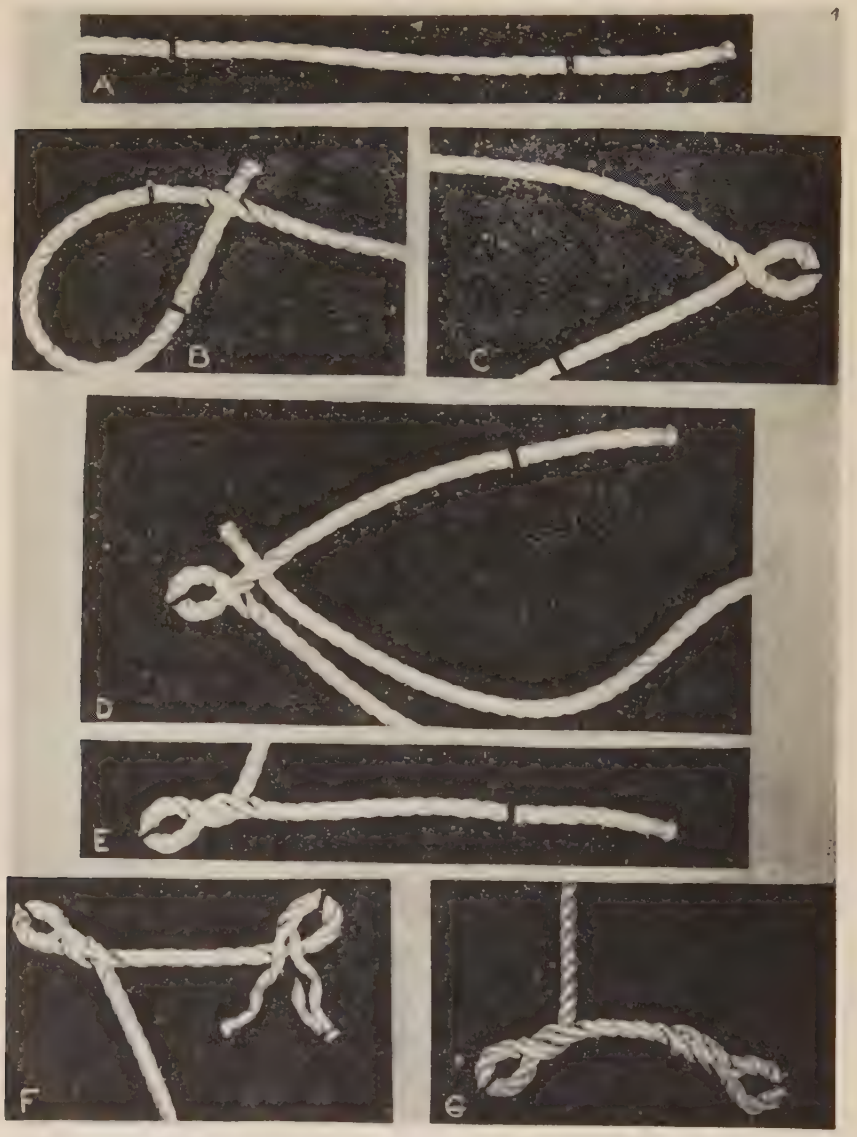


Figure 19. Illustration of steps involved in making the eye and loop splices in a rope halter.

the rope. The rope is then brought back into the first position held, the third strand of the main part of the rope raised and the right hand strand passed under it from the lower side so that the end comes out where the middle strand entered. Each loose strand end is placed under one strand of the main rope, and the splice is completed.

When both loops are completed *(Fig. 19-g)* the lead end of the rope is passed through the eye loop first, forming the part that goes over the neck, back of the ears. The end of the rope is then passed through the loop splice, forming the piece below the jaw.

The eye loop and lead rope are on the left side of the head in order that the holder may use his right hand for leading.

A crown knot may be put on the end of the lead rope to keep it from raveling. This is made by unraveling the end of the rope 6 inches. One strand is then passed between the other two to form a loop. Next pass strand 2 between the loop and strand number 3. Strand 3 is passed over strand 2 and through the loop formed by strand 1. The strands are then pulled down tightly to form the crown knot and the ends braided into the rope *(Fig. 20)*.

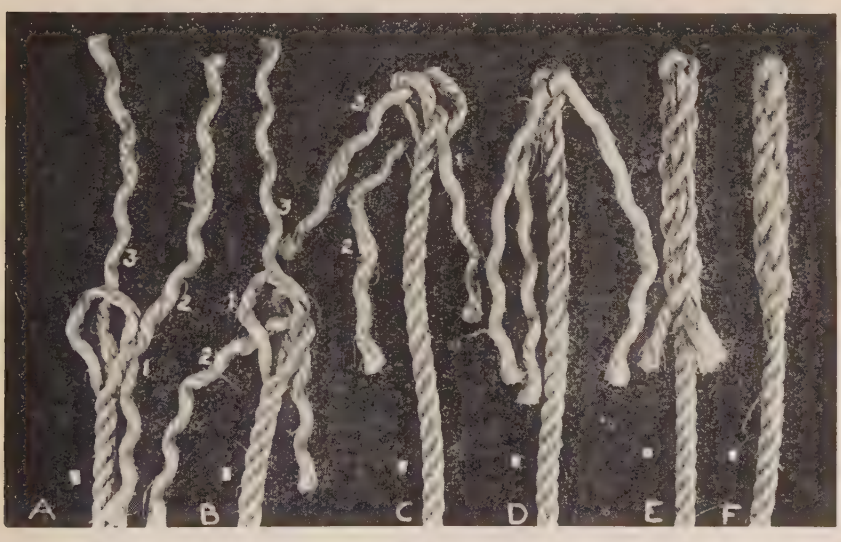


Figure 20—Illustration of the steps in making the end and splice in a rope halter.

CHAPTER 9

Diseases, Infections, and Parasites

By
Dr. E. M. Gildow

The beef calf is often affected with disease conditions caused by infectious diseases, digestive disturbances, nutritional deficiencies, parasites, and traumatic injuries. A knowledge of the most important of these disease conditions will help the beef calf club member to select a healthy calf and aid him in keeping the calf in a thrifty condition.

Infectious Diseases

Calves are subject to infections contracted from their dams and to diseases contracted from their environment. Tuberculosis, pink eye, hemorrhagic septicemia, and scours may be contracted from their dams. Anthrax, blackleg, tetanus or lock jaw, footrot, calf diphtheria, actinomycosis or lumpy jaw, pneumonia, infectious warts, paratyphoid dysentary and miscellaneous types of scours may be picked up in the yards and pens or other sources by contact.

Blackleg can be prevented by vaccination with blackleg bacterin in areas where this disease is prevalent.

Infectious warts are common on calves. They occur on any part of the skin but are most common around the head and neck where the skin comes in contact with the feed racks, mangers, etc. These warts are caused by a virus and are readily transmitted to calves by contact with contaminated equipment. Infectious warts on calves, like seed warts on children, are automatically eliminated as the calf attains maturity. The only entirely satisfactory way to control them is by preventing their development through keeping the calf out of contact with other affected calves or with equipment which affected calves have used. Thorough washing of mangers, stanchions, etc., with a 3 per cent solution of dip will kill the causative organism. Extremely large or unsightly warts may be removed by placing an elastic ligature tightly around the base.

Scours, which result from various causes, is one of the most common causes of unthriftiness in calves. One of the most common causes of scours is over-feeding, whether the calf is on a cow or bucket fed. With bucket-fed calves, dirty buckets are commonly at fault. Contact with infected calves or contaminated lots will result in scours caused by bacterial infection, small intestinal worms, or coccidiosis. Paratyphoid infection is not an uncommon cause of scours.

In all cases of scours, the feces are thin or watery. The color ranges from a light gray or greenish-yellow to brown or red, depending on the cause and treatment of the trouble. In very young calves, the feces may be almost white. Red or bloody scours are usually caused by coccidia.

An average case of scours will set a calf back a full month in time required to finish for market. Therefore, it is advisable to prevent scours by careful feeding, cleanliness in feed equipment and mangers, preventing contact with calves that are scouring, and by supplying a clean dry pen for an exercise lot.

The treatment of scours depends on the age of the calf and the type of scours present. First, the cause of scours should be determined and controlled. If the calf is small, a heaping tablespoonful of baking soda twice a day for three doses and cutting the feed allowance in half will sweeten the intestinal tract and usually check the irritation. With older calves, castor oil at the rate of 1 ounce per 100 pounds of body weight followed by a tablespoonful of baking soda ($NaHCO_3$) for each 100 pounds for two or three feeds is often helpful. The castor oil must be given as a drench. The soda may be placed in the milk fed the calves, or given as a drench in a pint of water. The pens, mangers and feed racks should be thoroughly cleaned and, if possible, a clean lot provided.

Pneumonia very often attacks calves that have scours. In that event or if the scours cannot be stopped, it is advisable to call the local veterinarian.

Footrot develops between the toes either in front or at the heel in the form of a swelling, and is accompanied by redness and pain when pressure is applied. Affected animals show definite lameness and rapid loss in weight. The organism (germ) *Actinomyces necrophorus* is definitely associated with this disease. Calves contact footrot from lots or corrals that have harbored infected cattle. The disease is best prevented by keeping calves out of contaminated lots during wet weather.

Treatment consists of poulticing the foot for 24 hours, removing the necrotic tissue, packing the foot with a 25 per cent dip solution for 36 hours, and keeping the calf in a clean box stall until the wound heals.

Calf Diphtheria is an infection of the lips, tongue or back part of the mouth with *Actinomyces necrophorus*, the organism associated with footrot. Affected calves have a swelling of the face or throat, have difficulty in swallowing and sometimes have feed accumulate in the back of the mouth. Treatment consists of removing the foreign material in the mouth, scraping the necrotic tissue out with a spoon and painting the cleaned ulcer with a saturated solution of copper sulphate. One or two treatments usually controls the infection.

Ringworm is an infectious disease of young calves caused by a fungus. The lesions are usually circular, gray, raised scabs in the region of the face and neck. The infection is contracted by contact with stanchions, feed racks, and other equipment, or with other calves that are contaminated or infected with the disease organism. Treatment consists in the daily application of

sulphur ointment or a 10 per cent suspension of flowers of sulphur in mineral oil.

Many infectious diseases of calves are very difficult to control. If one is not reasonably sure of the cause of the trouble or of adequate methods of control, the local veterinarian should be called.

Digestive Disturbances

Scours, bloat, impaction and constipation are common digestive disturbances. Scours have already been discussed.

Bloat may be caused by a too rapid change of feed, by feeding mouldy or spoiled feed, or by the feeding of a too restricted ration such as hay and barley. Dry feed bloat is usually readily controlled by the use of ½ to 1 pint of mineral oil given slowly as a drench. Green feed bloat usually occurs following the pasturing of calves on green alfalfa or clover pasture. This is particularly true if the alfalfa is wet with dew or rain and if the animal is not accustomed to such feed. Green feed bloat is difficult to control since the gas mixes into the feed mass, making a frothy mixture which impedes penetration by medicines. The use of a volatile antiseptic such as 1 ounce of formalin in 1 quart of cold water as a drench for a 1000 pound animal is recommended. In all types of bloat, the use of a bit of rope in the mouth of the animal is advisable. Standing the calf on a hillside with the hind feet low and the use of small amounts of mineral oil as a lubricant of the esophagus are also desirable. The prevention of bloat rests in controlling the ration being fed.

Impaction of the paunch or large stomach is usually caused by overfeeding the calf, the use of poor or indigestible roughage, or by over-feeding of grain. The calf stops ruminating, goes off feed, and is constipated or has a slight diarrhea. This condition is best controlled by reducing the feed by one half and giving the calf a dose of Epsom salts at the rate of 1 pound per 1000 pounds of weight. If this does not restore the appetite and start rumination, the local veterinarian should be called for assistance. Constipation is the opposite of diarrhea and is evidence that digestion in the intestines is not occurring normally. The use of succulent feeds, good alfalfa hay or bran should be increased. Occasionally a laxative in the form of Epsom salts may be necessary to get the animal back to normal.

Parasites

Permanent pastures, old cattle corrals and lots are usually heavily seeded with the eggs of small worms that inhabit the stomach and intestines of young cattle. Affected calves become thin or may have a chronic diarrhea.

Lungworms cause a chronic cough and slow up rates of gain. Contaminated pastures, corrals or lots should not be used for club calves. Other internal parasites that may cause trouble in calves are tapeworms, liver flukes, and coccidia.

External parasites of major importance are lice, warbles, and flies.

Lice are prevalent on cattle in Idaho. Many beef club calves are affected with lice. These calves have a rough coat and may rub the hair off in spots. Both the lice and their eggs (or nits) can be seen by examining the skin and hair in the suspected areas. Three species of lice attack cattle. However, all can be controlled by similar methods. When the weather is warm, the most satisfactory method is by the use of a 3 per cent dip solution as a wash. Treatment should be repeated at weekly intervals for two or three times in order to kill the lice as they hatch from the eggs.

Two applications of 10 per cent of sulphur in oil or grease with a week interval between is sufficient. In cold or bad weather, powders, such as 1 part of sodium fluoride in 5 parts of Fuller's earth or flour, may be used in the place of dips or oils. Brushes, combs, blankets, etc., should be disinfected before use when lice are present on calves.

Warbles are the larvae of the gad fly or bot fly of cattle. The eggs are laid on the hairs of the legs of cattle in the summer and show up as warbles under the skin of the back in the late winter or early spring. Warbles cannot be prevented unless they are eradicated from all cattle in the vicinity where the calves are produced. In the club calf, the warbles may be squeezed out of the back and killed. Care should be taken to prevent injury to the back of the calf by avoiding excessive pressure or by breaking a larvae in the back.

Horn flies, stable flies, and blow flies may irritate calves considerably, thus slowing the rate of gain. A dark stall for use during the heat of the day and the use of non-irritating fly sprays or the use of fly nets will reduce the annoyance of the biting flies. The application of pine tar to dehorning, castrating, and other wounds will prevent their infestation with blow fly maggots.

These flies breed in fresh cow manure, loose bedding, and in the carcasses of dead animals. The regular removal of these breeding places will reduce the fly menace.

Nutritional Deficiencies

The most common nutritional deficiency diseases of the beef calf are: Goiter, caused by a deficiency of iodine; rickets, caused by a deficiency of calcium and phosphorus and Vitamin D; and Vitamin A deficiency, which causes night blindness, sore eyes, and lowered resistance. Goiter is a border-line deficiency disease in most of the beef cattle country of Idaho. It can be entirely prevented by adding 1 ounce of potassium iodide to each 300 pounds of the salt mixture. Rickets is most often present in calves fed on grains and non-legume roughages such as meadow, march, and timothy hays. When calves are fattened on grains and non-legume hay, add 1 per cent of ground oyster shell to the grain mixture. When alfalfa hay or some other legume is the roughage,

a calcium supplement is not necessary. Affected calves are stiff and soon lose condition. Vitamin A deficiency causes night blindness and reduces the vitality so that infections and parasites may gain a foothold. The use of bright green colored hay will prevent Vitamin A deficiency. Calves on whole milk will not ordinarily have these nutritional deficiencies with the possible exception of goiter.

Poisoning

Lead poisoning is very common in calves. Calves should not be confined to pens or corrals that have been painted with a white lead paint. Calves may become poisoned with larkspur, water hemlock, sweet clover hay, or with mercury as found in blistering ointments.

Dehorning and Castrating

Dehorning of beef calves is generally advisable. Dehorned calves are usually more easily handled and where several are penned together, it reduces their interference and increases gains. If possible, dehorning should be done during cool weather to eliminate possible fly menace. Calves should not be dehorned while on sweet clover hay, pasture, or silage. It may, however, be safely done two weeks after they are taken off such feed. Calves may be conveniently dehorned by placing them in a chute or stanchion and tying their head firmly around to one side. Any small-toothed saw may be used. In order to prevent scurs or horn stub formation, the horn should be removed at least ¼ inch below the hair line. A neatly dehorned calf closely resembles a naturally polled animal. Some bleeding will occur and is beneficial. If excessive bleeding occurs, the application of an elastic band, which may be made from a rubber tube, around the poll just above the ears will usually control it. Care should be taken to prevent the wound from becoming fly blown by applying a pine tar dressing to the wound. The growth of horns may be prevented in calves under 10 days of age by thoroughly burning the horn buds over an area the size of a half dollar for each horn with a caustic stick.

The **castration** of calves may be done any time before they are 6 months of age. It is often done when the calf is about 3 months old. Cool weather and a clean grassy spot are advisable for the operation. The calf may be castrated standing or after having been thrown and tied in a stretched position. The hands of the operator and the knife should be clean and disinfected and the scrotum should be moistened with a 3 per cent dip solution. In order to obtain a good cod in beef calves, it is advisable to split the scrotum on the sides next to the legs, making the opening two thirds the length of the testicle and down to the lower tip of the scrotum. The testicle is pulled down and the cord scraped off well above the top of the testicle. Calves on sweet clover should be changed to some other feed for 2 weeks before castration. Pine tar should be applied to the wound to protect it from becoming fly blown

Mild daily exercise will prevent excessive swelling following castration.

The most common causes of trouble with beef calves in Idaho are scours, bloat, lice, ringworm, and warts.

CHAPTER 10

Estimation of Weights and Gains by Measurement

Where scales are convenient, club steers should be weighed every 28 days. As this is not convenient and possible on many farms, it is necessary to estimate the weight of the calves.

Table 2 gives the range of weights of average, thrifty and well-doing commercial cattle. A club calf within this range of weight would be making satisfactory progress. Weights in excess of the maximum are not uncommon and are desirable.

From large numbers of records, the U. S. Department of Agriculture has found there is a fairly uniform ratio between the heart girth and the weight of good cattle. Table 3 has been used by club members and others in estimating the weight of cattle and the figures check closely in a majority of cases. Some club members who have scales available check the weights and heart girth measurements of the calves each month, reporting variations that occur.

Table 2—Ranges of weight of thrifty and well-doing commercial cattle.

Age (Months)	Pounds	
	From	To
1	110	120
2	160	180
3	210	240
4	260	300
5	310	360
6	360	420
7	410	480
8	460	540
9	510	600
10	560	660
11	610	720
12	660	780
13	710	840
14	760	900
15	810	960

Table 3—Approximate weights of beef cattle of good grade for a given heartgirth measurement.

Heart-girth inches	Weight pounds	Heart-girth inches	Weight pounds	Heart-girth inches	Weight pounds
30	78	50	372	70	910
30½	82	50½	382	70½	926
31	87	51	393	71	942
31½	91	51½	404	71½	959
32	96	52	415	72	977
32½	101	52½	426	72½	994
33	106	53	437	73	1,011
33½	112	53½	449	73½	1,029
34	118	54	461	74	1,047
34½	123	54½	472	74½	1,065
35	129	55	484	75	1,083
35½	135	55½	496	75½	1,100
36	141	56	508	76	1,117
36½	147	56½	520	76½	1,135
37	153	57	533	77	1,154
37½	159	57½	545	77½	1,173
38	166	58	558	78	1,192
38½	173	58½	571	78½	1,211
39	181	59	585	79	1,230
39½	188	59½	598	79½	1,249
40	195	60	611	80	1,269
40½	202	60½	624	80½	1,288
41	210	61	637	81	1,308
41½	218	61½	651	81½	1,328
42	226	62	665	82	1,348
42½	234	62½	679	82½	1,368
43	242	63	693	83	1,388
43½	250	63½	708	83½	1,409
44	259	64	723	84	1,430
44½	267	64½	738	84½	1,451
45	276	65	753	85	1,472
45½	285	65½	768	85½	1,493
46	294	66	783	86	1,514
46½	303	66½	798	86½	1,535
47	313	67	814	87	1,557
47½	322	67½	829	87½	1,578
48	332	68	845	88	1,600
48½	342	68½	861	88½	1,622
49	352	69	877	89	1,644
49½	362	69½	893	89½	1,667